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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/616,314	07/17/2000	Mikio Kuwahara	NIT-209	7237
24956	7590	06/03/2005	EXAMINER	
MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.			DESIR, PIERRE LOUIS	
1800 DIAGONAL ROAD			ART UNIT	
SUITE 370			PAPER NUMBER	
ALEXANDRIA, VA 22314			2681	

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/616,314

Applicant(s)

KUWAHARA ET AL.

Examiner

Pierre-Louis Desir

Art Unit

2681

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-5 and 10-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-5 and 10-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>04/25/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Allowable Subject Matter

The indicated allowability of claims 3-5 and 10-12 are withdrawn in view of the newly discovered reference(s) to Sawahashi et al. (Sawahashi) U.S. Patent No. 6137788. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-5, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruckert et al. (Bruckert), U.S. Patent No. 6226317, and Fukasawa et al. (Fukasawa), U.S. Patent No. 5463660, in further view of Sawahashi et al. (Sawahashi), U.S. Patent No. 6137788.

Regarding claim 3, Bruckert discloses a wireless positioning method for estimating a position of a terminal by using reception timings of signals transmitted from first and second base stations (see items 12, 14 of fig. 1) in a cellular communication system. The method comprises a first step of storing received signals from a plurality of base stations in a storing circuit (see col. 6, lines 4-7); a second step of reading out received signals stored in the storing circuit (see col. 6, lines 4-10) and measuring a reception timing of a received signal from the first base station having a power higher than that of a received signal from a second base station (see col. 2, line 59 through col. 3, line 10); a third step of canceling the received signal from the first

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base station from stored received signal (see col. 5, lines 50-63); and a fourth step of reading out received signals stored in the storing circuit (see col. 6, lines 4-10) and measuring a reception timing of the received from the second base station after the second step (see col. 5, line 64 through col. 6, line 10), wherein the third step comprises: a fifth step of forming a replica of the received signal of the first base station from the stored signal, and a sixth step of subtracting the replica from the stored signals (see col. 5, line 50 through col. 6, line 20).

Although Bruckert discloses a method as described above, Bruckert does not disclose that the sixth step comprises overwriting the signals stored in the storing circuit.

However, Fukasawa discloses a method, which comprises storing received signals from first and second base stations into a storing circuit (shift register 6) in a terminal (see fig. 1, col. 3, lines 21-31 and 51-63). The method also comprises forming a replica of the received signal of the first base station from the stored signals (see col. 5, line 62 through col. 6, line 3). The method further comprises subtracting the replica from the stored signals and overwriting the signals stored in the storing circuit with a result of the subtraction step (see col. 6, lines 4-9).

Although Bruckert and Fukasawa disclose a method as disclosed, Bruckert and Fukasawa do not disclose a method comprising a seventh step of forming a replica by processing a component of the received signal from the first base station in a procedure of despreading, demodulation, and despreading by using CDMA system.

However, Sawahashi discloses a method wherein a replica is formed by processing a component of the received signal in a procedure of despreading, demodulation, and despreading by using CDMA system (see figs. 1-3, col. 2, lines 31-59, col. 5, lines 7-39; col. 6, lines 14-16 and lines 60-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Bruckert with Fukasawa and Sawahashi in order to minimize the amount of memory required to perform the interference cancellation.

Regarding claim 4, Bruckert and Fukasawa disclose a method as disclosed above (see claim 3 rejection).

Although Bruckert and Fukasawa disclose a method as described, Bruckert and Fukasawa do not specifically disclose a method wherein the seventh step includes an eight step of amplifying a received signal after the despreading, demodulation and resreading.

However, Sawahashi discloses a method, which includes amplifying a received signal after the despreading, demodulation and resreading (i.e., adder for adding the output of the resreader to produce an interference signal replica) (see col. 6, lines 17-18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings to arrive at the claimed invention. A motivation for doing so would have been to improve reliability of reproduction data (see col. 5, lines 2-5).

Regarding claim 5, Bruckert and Fukasawa disclose a method as disclosed above (see claim 4 rejection).

Although Bruckert and Fukasawa disclose a method as described, Bruckert and Fukasawa do not specifically disclose a method which includes the step of correcting at least one of amplitude fluctuation and phase rotation by a signal propagation path.

However, Sawahashi discloses a method, which includes correcting the amplitude fluctuation (i.e., amplitude variation) by a signal propagation path (see fig. 15, col. 19, lines 33-

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55), and correcting the phase rotation (i.e., phase variation) by a signal propagation path (see col. 13, lines 43-52).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings to arrive at the claimed invention. A motivation for doing so would have been to produce interference replica with good accuracy.

Regarding claim 10, Bruckert discloses a wireless positioning apparatus (mobile subscriber unit 18) comprising: a signal processor for canceling a received signal from a first base station whose reception power is higher than that of a received signal from a second base station in a cellular communication system (see col. 5, lines 21-63). It is also inherent that the apparatus also comprises a CPU for processing an output signal of the signal processor (determining location based on TOA measurements) (see col. 5, lines 64 through col. 6, line 10). The apparatus also comprises a storing circuit (beacon signal sample and store stage 56) for storing the received signal from the first and second base stations, and a timing measurement circuit (TOA determinator 60) for measuring reception timings of the signals received from the first and second base stations based on signals stored in the storing circuit (see col. 5, lines 21-49). The signal processor has a replica generating circuit for generating a replica of the received signal of the first base station from the signals stored in the storing circuit and a subtraction circuit for subtracting the replica from the stored signals (see col. 5, line 50 through col. 6, line 10), and the timing measurement circuit measures the reception timing of the signal received from the second base station based on the result of the subtraction (see col. 5, line 50 through col. 6, line 10).

Although Bruckert discloses a method as described above, Bruckert does not disclose that the stored signals are overwritten with a result of the subtraction.

However, Fukasawa discloses an apparatus, which comprises a storing circuit (shift register 6) for storing received signals from first and second base stations (see fig. 1, col. 3, lines 21-31 and 51-63). The apparatus also comprises a replica signal generating circuit (interference estimator 18) for generating a replica of the received signal of the first base station from the stored signals (see col. 5, line 62 through col. 6, line 3). The apparatus further comprises a subtraction circuit (interference subtractor 20) for subtracting the replica from the stored signals, wherein the stored signals, wherein the stored signals are overwritten with a result of the subtraction (see col. 6, lines 4-9).

Although Bruckert and Fukasawa disclose an apparatus as disclosed, Bruckert and Fukasawa do not disclose an apparatus wherein the replica signal generating circuit has a despreading circuit for despreading a component of a received signal from the first base station by using CDMA system; a demodulating circuit for demodulating an output signal of the despreading circuit; and a resreading circuit for resreading an output signal of the demodulating circuit.

However, Sawahashi discloses a despreading circuit for despreading a component of a received signal by using a CDMA system (see col. 6, lines 60-65); a demodulating circuit for demodulating an output signal of the despreading circuit (i.e., demodulation apparatus) (see col. 5, lines 7-39); and a resreading circuit for resreading an output signal of the demodulating circuit (i.e., resreader) (see col. 6, lines 14-16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Bruckert with Fukasawa and Sawahashi in order to minimize the amount of memory required to perform the interference cancellation.

Regarding claim 11, Bruckert and Fukasawa disclose an apparatus as described above (see claim 10 rejection).

Although Bruckert and Fukasawa disclose an apparatus as described, Bruckert and Fukasawa do not specifically disclose an apparatus further comprising an amplifying circuit for amplifying an output signal of the respreading circuit.

However, Sawahashi discloses an amplifying circuit (i.e., adder) for amplifying an output signal of the respreading circuit (i.e., adder for adding the output of the respreader to produce an interference signal replica) (see col. 6, lines 17-18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings to arrive at the claimed invention. A motivation for doing so would have been to improve reliability of reproduction data (see col. 5, lines 2-5).

Regarding claim 12, Bruckert and Fukasawa disclose an apparatus as described above (see claim 10 rejection).

Although Bruckert and Fukasawa disclose an apparatus as described, Bruckert and Fukasawa do not specifically disclose an apparatus further comprising a correcting circuit for correcting at least one of amplitude fluctuation and phase rotation by a signal propagation path.

However, Sawahashi discloses an apparatus, which includes correcting the amplitude fluctuation (i.e., amplitude variation) by a signal propagation path (see fig. 15, col. 19, lines 33-

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55); and correcting the phase rotation (i.e., phase variation) by a signal propagation path (see col. 13, lines 43-52).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings to arrive at the claimed invention. A motivation for doing so would have been to produce interference replica with good accuracy.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre-Louis Desir whose telephone number is 703-605-4312. The examiner can normally be reached on (571) 272-7799.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emmanuel L Moise can be reached on (571) 272-3865. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Pierre-Louis Desir
AU 2681
05/09/2005

JEAN GELIN
PRIMARY EXAMINER

Jean Allard Gelin